Assembly of European Regions

Political report

The Role for the Regions in Enabling a Future for Electric Vehicles

April 2013
Councillor Melville Kendal
Deputy Leader of Hampshire County Council (UK)
The Rapporteur’s Foreword

Dear Colleagues,

There is a pressing need for Europe to reduce its carbon emissions and transport is one of the key areas through which this can be achieved. I believe that electric vehicles have an important role to play in attaining this, and in the future mobility of European regions.

At present, the take-up of electric vehicles across much of Europe has been limited. Following discussions with AER members, it has been identified that the main reasons for this are as follows:

- lack of confidence in the current battery charging infrastructure,
- inconvenient payment methods for battery charging,
- lack of promotion of the benefits of the vehicles;

I am grateful for the recent European Commission announcement that the use of the “Type 2” plug will be a common standard for the whole of Europe, which addresses the first point. However, for take-up to be increased, the other issues still need to be addressed.

Inter-operability of the supporting infrastructure behind vehicle charging will be vital, and although no standards have been established yet, the AER will seek to support the development of these.

Universality in this area will allow the electric vehicle driver to be confident in travelling outside of their own locality, knowing that they will be able to locate charging infrastructure and complete payment without the possible inconvenience of registering for a different payment scheme.

It has also become apparent that consumers still do not understand enough about electric vehicles to feel able to commit to investing in them. This report proposes that the Regions utilise their links with the community to promote the benefits of electric vehicles themselves, and the charging infrastructure available. This can help to increase demand and stimulate the need for further investment in charging points.

AER member regions could also utilise electric vehicles in their own fleets and promote training and education to develop individuals to take forward the electric vehicle agenda.

Following the observations made above, Hampshire County Council are to lead this paper on the role for the Regions in enabling a future for Electric Vehicles. Hampshire County Council would also like to take this opportunity to thank the following regions for their help in this report:
• Västra Götaland, Sweden
• Alsace, France
• Baden-Württemberg, Germany
• Norrbotten, Sweden
• Poitou-Charentes, France
• Quebec, Canada (AER observer)
• Sarajevo, Bosnia and Herzegovina
• Timis, Romania

By addressing the issues in this report, we can help to increase in the uptake of electric vehicles across the European Regions and make a positive contribution towards reducing carbon emissions from transport.

Councillor Melville KENDAL
Deputy Leader of Hampshire County Council
1. Summary of Recommendations

1.1 This report makes the following recommendations, with regards to enabling a future for electric vehicles in Europe:

• The AER insists on the importance of universality in supporting infrastructure for battery charging, such as registration and payment systems, supporting IT infrastructure and mapping of charging infrastructure, to complement the recent announcement of standardisation of plug type across Europe. (Para 5.1).

• The AER encourages all concerned EC departments and institution to promote inter-operability and universality in supporting infrastructure (Para 5.3).

• Lessons may be able to be drawn from Green eMotion programmes such as the Berlin ‘clearing house’ and work arising from the European Commission Staff Working Document on ‘Research and Innovation for Europe's Future Mobility’, on the standardisation of supporting infrastructure (Para 5.4).

• Further research and development work should be carried out on what form this universal supporting infrastructure may take, as well as further consultation with industry on the issue of supporting infrastructure (Para 5.5).

• The AER member regions should use their links with the community to promote the availability of electric vehicle infrastructure, highlighting to consumers where they can access charge sites (Para 7.1).

• The AER member regions should also inform consumers about the benefits of electric vehicle usage. This can be done in partnership with manufacturers and NGOs where possible (Para 7.1).

• Promotion of the availability of infrastructure should include specific reference to the availability of mapping, as and when this is the case, and regions should look to link to online mapping facilities via their own websites (Para 7.3).

• The AER member regions can promote the use of electric vehicles via provision of information (via website, leaflets etc), or through a suite of options that promote the visibility of the vehicles (Para 7.5).

• The AER member regions should also consider leading by example by utilising electric vehicles within their own fleets (Para 7.6).

• There may be scope for AER regions incorporating an educational aspect into their promotion, for example in creation of education and training programmes (Para 7.7).
2. Context

2.1 Achieving European, National and Regional carbon reduction targets is becoming increasingly urgent. Carbon emissions from vehicles are identified as being a key area for improvement, with electric vehicle driving (i.e. the tank to wheel consumption) being treated as zero CO$_2$ emitting by internationally agreed UNECE methodology. Governments and vehicle manufacturers around Europe are under pressure to develop alternatives to fossil fuel driven vehicles and push towards a low carbon transport sector.

2.2 Beyond the primary carbon savings mentioned above, the secondary gains can truly be maximised when the electricity that is utilised comes from renewable sources. This helps achieve key targets: for example, those countries within the European Union must meet the requirements of Directive 2009/28/EC for a 20% share of all energy from renewable sources by 2020, and with particular applicability to electric vehicles, a 10% share of energy used for transport from renewable sources.

2.3 Specific EU Policy on electric vehicles is largely based around the technological optimisation and market development strategies. In addition, the EU has developed a CO$_2$ emissions standard for vehicles via regulation (EC) n° 443/2009\(^1\) (for passenger vehicles, an additional, separate standard exists for light commercial vehicles). As a result of the regulation, the EU car manufacturers’ fleet average has to be aligned with an emissions standard of 130g CO$_2$/km by 2015. An additional target to reduce emissions to 95g CO$_2$/km by 2020 has recently been announced. Manufacturers will be able to use development of electric vehicles to offset CO$_2$ emissions from their other vehicles which should incentivise their development.

2.4 National policies on Electric Vehicles in Europe are too numerous to mention in this report. However, National Governments have put in place a number of measures and policies, including:

- Demonstration projects
- Helping to meet the costs of infrastructure
- Tax incentives to encourage use of electric (or lower-emission) vehicles
- Financial assistance to consumers purchasing electric vehicles
- Free access to toll-roads, parking, etc.
- Awareness campaigns

2.5 This report acknowledges that there is likely to remain a strong relationship between electric vehicles and renewable energy – for early adopters of the vehicles, their ‘green credentials’ are an important selling point. This will be important in encouraging take up of electric vehicles in the future.

2.6 Whilst emissions from road transport account for around one fifth of the EU’s total CO$_2$ emissions\(^2\) (2011 data), the implications of developing an electric vehicle industry could prove to be extremely beneficial to the European economy. There are 210 automobile plants across 22 different countries in Europe. Often, these plants group a large number of automotive suppliers around the same location, contributing enormously to the economy of regions and countries. The industry provides direct employment to more than 2 million people and indirectly supports another 10 million jobs in Europe.

Currently, the uptake of electric vehicles in Europe remains relatively low. The European Automobile Manufacturers Association (ACEA) state that in 2011 ‘9,132 pure electric cars were registered in the EU’. To put this into context, there were 12.8 million new cars registered in the EU overall in this period (thus pure electric cars fall short of 0.001% of the total, hybrid vehicles account for approximately 1% around Europe). Projections for future market share do not offer much optimism, for example in the UK where even the most optimistic projections suggest that electric vehicles will account for only 6.4% of total car sales in 2020.

Previous and ongoing projects and reports

A previous position paper on Electric Vehicles was developed on behalf of the AER Committee on Economy and Regional Development in May 2011 (Electric Vehicles In European Regions – Prospects And Challenges). This focused on the following five key areas:

- Mobility and infrastructure on a regional basis
- How to increase public demand for electric vehicles
- Promotion methods (public & industry)
- Industrial challenges (associated with changing demand & supply)
- Educational challenges and requirement for expertise

This report aims to build on the previous AER work, with specific focus and recommendations on some of the areas previously considered.

The European Green Cars initiative is a public/private partnership that was launched by the European Commission in 2008. The object of the initiative was to support Research & Development with a focus on ‘the electrification of mobility and road transport.’

A list of the fifty collaborative research projects that have been launched as a result of the initiative can be found at the following link: http://www.green-cars-initiative.eu/projects

Significant among these is the FP7 funded Green eMotion project. The Green eMotion project arose from the Green Cars initiative and seeks to achieve, amongst others, the following:

- to recommend selected standards for an interoperable electromobility system (de facto standards for Europe)
- to define the IT architecture for a European marketplace, including interfaces that allow for competition amongst support infrastructure suppliers

Some of the stated outcomes of the Green e-Motion project with regards to interoperable systems have considerable overlap with the issues and aims covered by this report.

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2 http://www.eea.europa.eu/publications/monitoring-co2-emissions-from-new (p4)
The Green Cars initiative has also published a European Roadmap for Electrification of Road Transport\(^7\). Key assumptions are made within the report including:

- of an intermediate, and more efficient ‘2nd generation’ of electric vehicles to market by 2016 (associated in turn with an ‘enlarged charging infrastructure’), and
- that mass production of electric vehicles will be seen in Europe by 2020.

The European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC) have been working to ensure that international standards meet European needs, including (for example) compatibility with national rules for wiring. A Co-ordination Group on e-Mobility has been established which aims to support coordination of standardisation activities during the critical phase of writing new standards or updating existing standards.

The European Commission’s CARS21 High Level Group was set up to make policy recommendations to support the competitiveness and sustainable growth of the European automotive industry. They published the ‘CARS2020’ Communication\(^8\) which served as an Action Plan for a competitive and sustainable automotive industry in Europe, for which reduction of CO\(_2\) emissions from vehicles is one key element.

Stakeholders Consulted

**2.17 The European Automobile Manufacturers Association (ACEA)**

The ACEA represent automobile manufacturers from across the world, so influence is not just limited to the area covered by the EU.

The ACEA support the increased uptake of electric vehicles, and have helped to influence the standardisation of plug type by making specific recommendations with regards to electric vehicle infrastructure\(^9\). The ACEA provide both a manufacturers’ perspective on how to increase uptake of vehicle usage, and technical information and knowledge to assist with making recommendations to policy makers.

**2.18 Eurelectric**

Eurelectric is the association of the electricity industry in Europe, whose members are involved in the production and supply of energy.

Eurelectric also support the increased uptake of electric vehicle usage, and have also previously made recommendations to this effect\(^10\). They also assist with understanding the implications that charging of electric vehicles has on the grid.

**2.19 AER Regions**

The following regions have contributed to this report:

- Alsace, France
- Baden-Württemberg, Germany
- Hampshire, UK

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\(^8\) http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012DC0636:EN:NOT
• Norbotten, Sweden
• Poitou-Charentes, France
• Quebec, Canada (AER observer)
• Sarajevo, Bosnia and Herzegovina
• Timis, Romania
• Västra Götaland, Sweden

3. The Issues

3.1 Following discussions with the key stakeholders, the following issues were identified as affecting the take up of electric vehicles.

• Infrastructure
  o Charging infrastructure
  o Supporting infrastructure
• Promotion
  o Promotion of infrastructure
  o Promotion of electric vehicle usage and new forms of mobility

3.2 The above are considered the areas in which the Assembly of European Regions has a particular role to play in supporting the regions and the manufacturers to intervene. They are areas where maximum benefit for electric vehicle usage can be realised. They are also the areas identified by the other stakeholders as needing support from regions in order to successfully address the issues.

4. Infrastructure

4.1 In this section we refer to both the actual charging infrastructure and the supporting infrastructure behind this (i.e. payment systems, mapping etc).

Charging Infrastructure Background:

4.2 A lack of clear direction and standardised approaches to rolling out electric vehicle technology has previously created uncertainty in the market place and has damaged consumer confidence in electric vehicles.

4.3 The AER welcomes the recent announcement by the European Commission that the "Type 2" plug will be used as the common standard for the whole of Europe, in working towards proposed targets for publically accessible charging infrastructure by 2020.

4.4 Regions are prepared to lead and influence in those areas where they have control. However, in this instance it is important that Regions are able to follow on from a clear direction set on a European scale, which private sector companies can work to deliver. Regions can now maximise the impact of this by facilitating the market where they can, such as by installing or enabling infrastructure, implementing demonstration projects or promoting public-private partnerships.

Supporting Infrastructure Background:

4.5 Alongside the actual plug-in charging infrastructure, it will now be particularly vital to create inter-operability in terms of ‘supporting’ infrastructure, including registration and payment for charging, as well as IT infrastructure and mapping of the location of charging infrastructure.

4.6 Universality in supporting infrastructure will be crucial in allowing the consumer confidence in travelling outside of their own locality, knowing that they will be able to locate charging infrastructure and complete payment without the possible inconvenience of registering for a different payment scheme.

4.7 The way in which consumers are able to use their bank cards at ATM machines across Europe is a good example of the model which charging schemes should follow - namely that registration with one company or agency should allow you access to all other companies’ or agencies’ systems.

4.8 The IT infrastructure that is utilised will also be important. In order to ensure that manufacturers have a similar scope from a research & development point of view, software infrastructure needs to be standardised (requirements, architecture, design specifications, etc). A similar approach already exists for fossil fuel vehicles (http://www.autosar.org).

4.9 There is currently no direct support within the EC for a complementary support structure for electric vehicles, and no Directorate General identified as having an interest in encouraging a complementary supporting infrastructure for electric vehicles. Achieving a uniform approach in development of supporting structure is acknowledged by all stakeholders as being critical to the future uptake of electric vehicles.

4.10 The requirement for developments in this area is however noted by the European Commission Staff Working Document on ‘Research and Innovation for Europe’s Future Mobility’, which states that standards are required for billing, on top of charging infrastructure.

Case Studies:

Green eMotion demo region DE1 – Berlin

4.11 RWE and the City of Berlin are working together on a Green eMotion demonstration of an interoperable electromobility system through use of a ‘clearing house’ for use in the electric vehicle marketplace.

“It’s a place where all communication by market participants comes together, where charging requests from all over Europe are processed, and where billing is initiated”[11].

4.12 Infrastructure data from 243 public outlets is fed in to the programme, which represents an important opportunity to cooperate with automotive partners in standardisation of supporting infrastructure.

Green eMotion demo region IT1 — Italy

4.13 This project, among other things, helps to fulfil the requirements of a pan-European interoperability of infrastructure via creation of an overview of publicly available
charging stations via a web portal, and other ongoing developments between industry, regional institutions and other partners.

**Green eMotion Deliverables: ICT Solutions**

4.14 The Green eMotion project has already made some important developments in the development of relevant ICT infrastructure:

http://www.greenemotion-project.eu/dissemination/deliverables-ict-solutions.php

### 5. Infrastructure Recommendations

5.1 The AER should lobby the relevant departments within the European Commission, to push forward the creation of universality in supporting infrastructure including registration and payment systems, supporting IT infrastructure and mapping of the location of infrastructure, to complement the announcement of ‘Type 2’ plugs as a European standard. Specifically, they should be lobbied to bring this universality into European legislation.

**Charging Infrastructure Specific:**

5.2 Regions should attempt to maximise the impact of the European Commission’s announcement of ‘Type 2’ plugs as a European standard by facilitating the market where they can, for example by installing or enabling infrastructure, implementing demonstration projects or promoting public-private partnerships.

**Supporting Infrastructure Specific:**

5.3 It will be useful for the AER to identify a Directorate General or Directorate Generals within the EC who have an interest in encouraging inter-operability and universality in supporting infrastructure such as registration payment systems, supporting IT infrastructure and mapping of the location of charging infrastructure.

5.4 There is no existing industry template for standardised supporting infrastructure, unlike with regards to charge points. Lessons may be able to be drawn from Green eMotion programmes such as the Berlin ‘clearing house’ (see case studies - 4.11), as well as anything that arises from the European Commission Staff Working Document on ‘Research and Innovation for Europe's Future Mobility’ call for the development of a standard for billing.

5.5 It may be also beneficial to lobby for further research and development work on what form this standardised infrastructure may take, or for further consultation with industry on the specific issue.

5.6 The fact that this issue is not being pursued particularly actively within the European Commission at the moment means that this a particular opportunity for the AER to influence the electric vehicle agenda in an important and original way.

5.7 The sooner action is taken, the better chance of influencing confidence in electric vehicles to help meet 2020 targets.

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11 [http://www.greenemotion-project.eu/upload/pdf/about_us/GreeneMotion_Ima_11ge_US.pdf](http://www.greenemotion-project.eu/upload/pdf/about_us/GreeneMotion_Ima_11ge_US.pdf)
6. Promotion

6.1 In this section we refer to both the promotion of the availability of the kind of infrastructure described above, and the promotion of the use of electric vehicles, in terms of highlighting of their benefits to residents, businesses and communities.

Promotion of Infrastructure Background:

6.2 A comprehensive picture of current situations across regions has not yet been established and therefore it is difficult to understand fully the barriers to uptake for electric vehicles. However, feedback suggests that consumers still do not understand enough about electric vehicles to feel able to commit to investing in them. There is also very little information on where consumers can access charge points and other supporting services.

6.3 Consumers need to be aware about electric vehicles and how to access the infrastructure. The regional bodies have good links with the community and can therefore use those links to inform and educate on the topic. This was acknowledged by stakeholders as being a key role for regions to play in supporting this agenda.

6.4 Consideration must therefore be given to how it can be demonstrated that electric vehicle infrastructure is available, and how it can be utilised.

6.5 This can also be interlinked with the mapping of charging points created as part of the standardisation of supporting infrastructure, which can be promoted accordingly.

6.6 Ultimately, there is little point in either regions or other agencies investing in infrastructure if the public is not aware of its existence and does not utilise it.

Case Studies:

6.7 To present, there have been no reports of the promotion of infrastructure to the AER that can be utilised as case studies.

Promotion of Electric Vehicle Usage and New Forms of Mobility Background:

6.8 There is also potential for regions, through promoting the benefits of electric vehicles and federating the local actors around common projects, working with the manufacturers, NGOs, municipalities and other relevant groups, to be able to influence the increased uptake of vehicle usage and new forms of mobility. Where this is purely in terms of public information campaigns, it may require comparatively little investment.

6.9 Noting, as demonstrated in the ‘Context’ section, that only a tiny proportion of vehicles registered in Europe in 2011 were ‘pure’ electric, there is an opportunity for regions to play an active role in helping to change this situation.

6.10 Regional authorities and administrations have a wide audience of residents and business, both as ‘customers’ and as targets of their public relations campaigns, positioning
them to be able to communicate the benefits of electric vehicles on a scale where their influence can be significant.

6.11 Regional authorities are also able to promote the use of electric vehicles and new forms of mobility via taking a number of actions to increase their visibility, which can include use of electric vehicles in their own fleets, provision of vehicles for car sharing schemes, use of electric vehicles in tourist areas (i.e. by visitors), providing financial support to electric vehicle users (i.e. through taxation, parking and toll-road charging) and creating opportunities to view or drive electric vehicles at ‘green events’.

Case Studies:

Region Poitou-Charentes – France

6.12 This Region has taken a number of actions in support of e-mobility. It has set out to create and develop a public system of car sharing (for citizens, firms and communities) including through purchase of the vehicles themselves and through negotiation with partners on their participation in the project. The Regional Council of Poitou-Charentes also supports the purchase of electric vehicles, industrial development, as well as the setup of infrastructure and services related to electric mobility through the launch of several calls for proposals and the creation of a dedicated fund.

6.13 Poitou-Charentes also organises an annual ‘green growth fair’, giving the opportunity to citizens to drive electric vehicles.

Alsace – France

6.14 This region has developed a framework "supporting the purchase of clean vehicles by public institutions within the National Education System", providing grant funding of 80% towards the purchase of clean vehicles (including electric vehicles, as well as natural gas or LPG vehicles).

6.15 Since 2012 schools in the Alsace Region have been particularly encouraged to invest in electric vehicles, leading to over €70,000 grant funding for four vehicles for schools in a relatively brief period of time. The scheme is ongoing.

7. Promotion Recommendations

7.1 The member bodies of the AER should use their links with the community to promote the availability of electric vehicle infrastructure, highlighting to consumers where they can access charge sites. Member bodies should also look to inform about the benefits of electric vehicle usage, for example through use of their websites and through their public relations campaigns. This can be done in partnership with manufacturers and NGOs where possible.

Promotion of Infrastructure Specific:

7.2 This can take the form of general public information programmes, describing the availability and location of infrastructure.
7.3 There will be a specific tie-in here with the standardisation of mapping infrastructure described previously. Promotion of the availability of infrastructure should include specific reference to the availability of mapping, as and when this is the case, and regions should look to link to online mapping facilities via their own websites.

**Promotion of Electric Vehicles Specific:**

7.4 This can also take the form of general public information programmes with regards to electric vehicles, which help to break down barriers, raise understanding and encourage use, helping to emphasise that there is an alternative to traditionally fuelled road vehicles.

7.5 This can be via the simple distribution of information (via website, leaflets etc) although there is also scope to take other actions which promote the visibility of electric vehicles, so as to encourage residents, businesses and communities to see them as a viable option, including the following:

- provision of vehicles for car sharing schemes,
- promotion of use of electric vehicles in tourist areas (i.e. by visitors)
- providing financial support to electric vehicle users (i.e. through taxation, parking and toll-road charging)
- creating opportunities to view or drive electric vehicles at ‘green events’

7.6 Furthermore, Regions, as public sector organisations, could lead by example by utilising electric vehicles within their own fleets.

7.7 There can also be an educational aspect, for example in the creation of education and training programmes with regards to electric vehicles may help to develop individuals who are further able to take forward the electric vehicle agenda.

8. Conclusions and summary of recommendations

This report makes the following recommendations, with regards to enabling a future for electric vehicles in Europe:

- The AER insists on the importance of universality in supporting infrastructure for battery charging, such as registration and payment systems, supporting IT infrastructure and mapping of charging infrastructure, to complement the recent announcement of standardisation of plug type across Europe. (Para 5.1).

- The AER encourages all concerned EC departments and institution to promote interoperability and universality in supporting infrastructure (Para 5.3).

- Lessons may be able to be drawn from Green eMotion programmes such as the Berlin ‘clearing house’ and work arising from the European Commission Staff Working Document on ‘Research and Innovation for Europe’s Future Mobility’, on the standardisation of supporting infrastructure (Para 5.4).

- Further research and development work should be carried out on what form this universal supporting infrastructure may take, as well as further consultation with industry on the issue of supporting infrastructure (Para 5.5).
• The AER member regions should use their links with the community to promote the availability of electric vehicle infrastructure, highlighting to consumers where they can access charge sites (Para 7.1).

• The AER member regions should also inform consumers about the benefits of electric vehicle usage. This can be done in partnership with manufacturers and NGOs where possible (Para 7.1).

• Promotion of the availability of infrastructure should include specific reference to the availability of mapping, as and when this is the case, and regions should look to link to online mapping facilities via their own websites (Para 7.3).

• The AER member regions can promote the use of electric vehicles via provision of information (via website, leaflets etc), or through a suite of options that promote the visibility of the vehicles (Para 7.5).

• The AER member regions should also consider leading by example by utilising electric vehicles within their own fleets (Para 7.6).

• There may be scope for AER regions incorporating an educational aspect into their promotion, for example in creation of education and training programmes (Para 7.7).

Information on the dissemination of the report

This report will be sent in the first place to all Presidents of AER member regions. It will also be presented to the European commissioners in charge of regional policy, but also to the different DGs managing this issue. The report will be disseminated to the relevant members of the European Parliament. It will be communicated to the Presidency, to the Permanent Representations to the EU, to the Committee of the Regions and to the European Economic and Social Committee. The report will be presented at the occasion of several conferences dedicated to sustainable energy issues. Finally, the AER members are invited to bring this report to their national governments, and to make use of the advice and best practices contained in the report.

Acknowledgments

The AER would like to address its warmest thanks to the regions that were actively involved in the preparation of this report:

• Hampshire (GB)
• Alsace (F)
• Baden-Württemberg (D)
• Norrbotten (S)
• Poitou-Charentes (F)
• Quebec (CA) (AER observer)
• Sarajevo (BIH)
• Timis (RO)
• Västra Götaland (S)
Your region wishes to lead on an AER political report?

Inform the AER General Secretariat and fill-in the report proposal form. Once your proposal is accepted by the AER Presidium, gather about 15 regions, under the lead of a political representative of your region. Thanks to the AER secretariat support, you will be able to organise a few meetings with the ad hoc working group and to draft, in concertation with all the involved regions, a political report that will then be adopted by the AER Bureau and brought by your politician towards the relevant European and national decision-makers.

For more information on the Hampshire Report:

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